003660

M E M O R A N D U M

TO: Martin S. Kapp, Chief Engineer
FROM: James J. Kirk
DATE: August 10, 1972
SUBJECT: SPRAY-ON FIRE PROOFING MATERIALS

COPY TO: D.N. Mandell

Final inspections of completed construction at Port Authority facilities and an investigation of a recent fire at the World Trade Center by my staff, as well as our review of reports by outside organizations including the steel and insurance industries, have led us to question the degree of effectiveness of spray-on fireproofing installations in protecting structural steel. Since this structural protection is important to life safety, property replacement costs and the integrity of structures in a fire situation, I am bringing this matter to your attention and requesting your evaluation and advice.

We are aware that testing organizations have established the effectiveness of spray-on fire proofing materials under standard test conditions and that Port Authority contract specifications require materials meeting test specifications to be used. Doubts have been raised, however, as to whether the standard tests used to fire-rate steel and its protection relates accurately to real fire conditions and complete structural assemblies. We believe that, if it has not already been done, these doubts should be evaluated and any changes found necessary in our present approaches be made.

A second matter requiring your evaluation concerns the measures that must be taken in the field to ensure that a completed installation meets its intended purpose and equals the installation tested in the laboratory. Our observations of actual installations pose questions on such features as the thickness of the spray-on covering, the adhesion of the material, and the completeness of coverage. Thicknesses of spray-on materials appear to vary considerably and in many places seem to be less than specified; in some cases, steel appears to have some buildup of foreign materials on its surface when the fireproofing materials are applied, raising doubts as to adhesion; and, finishing trades dislodge the spray-on material leaving areas unprotected unless spot reapplications are made.

A recent fire which occurred in an area below grade in the World Trade Center in April, 1972 may be pertinent to the case at hand. Severe damage to steel members resulted despite the spray-on fire proofing protection. A copy of our report on this fire is attached to this memorandum for your information.

PA LAW DEPARTMENT
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Please advise as to the degree of protection afforded by spray-on fireproofing and as to the test methods which should be used in the field to ensure that effective protection is achieved.

Your advice on the matter will be appreciated since it will aid us in our final inspections of newly completed construction and in working with the departments to develop fire protection programs for Port Authority installations.

James J. Kirk
Chief
Inspection and Safety Division

JJK:law
att.

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SAFETY INSPECTION REPORT

ROUT.
1. —
2. —
3. —

FACILITY: WTC
DATE: 6/6/72
AREAS INSPECTED: Tower A
61-65
TYPE OF INSPECTION: ☑ CONSTRUCTION ☐ OPERATIONAL
INSPECTED BY: T. Mathur TITLE: S.E.

OBSERVATIONS, RECOMMENDATIONS, ACTION TAKEN AT SITE	ACTION TAKEN
Bracing of Fireproofing is necessary in the ceiling beams and joists perpendicular to the following principal columns.	
Floor	
61st — South (2E) East (1E) North (1W)	
62nd — South (2E) East (1E) North (1W) West (2W)	
63rd — East (1E)	
64th — South (1E) North (1W)	
65th — East (1E)	
66th — South (1E) East (1E) North (1W) West (1W)	

Bracing of fireproofing is necessary at this location to avoid the beams of fireproofing to collapse due to the beams.